

AUDIT II

Country Report

AUSTRIA

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SUMMARY OF ENERGY AUDITING

The goals for the Austrian energy policy are: Security of supply, cost-efficiency of the energy supply, environmentally benign energy supply, social acceptability of the energy supply system. In order to achieve these objectives the federal government especially makes use of the following strategies: Promotion of the rational use of energy (improvements in energy efficiency) and of renewable sources of energy.

In June 2002 the ***national climate strategy*** passed the Council of Ministers, suggesting additional measures in the sectors room heating/buildings, transport, industry, waste, agriculture and forestry and energy supply, where energy audits might be included especially for industry and buildings.

Energy Audit Programmes

None.

Other Programmes with Energy Audits

The Branch Concepts for industry and trade

The branch concepts started as regional activity in Upper Austria and have been adopted in several regions. The Branch Concept means that in a pilot study 10 to 15 companies of one sector/branch are investigated in an energy audit, identifying their main energy relevant processes, forming energy indicators and suggest energy saving measures. The results from these pilot cases are spread to the sector companies encouraging them to similar actions. The concept introduces best practises within the branch increasing also the awareness for rational use of energy.

The Branch Concepts are targeted to services and industrial sector buildings and processes (mainly SME) and cover today: metal industry, joineries, brick and ceramics industry, sawmills, plastic industry, butchers, bakeries, office buildings, hotels and restaurants, supermarkets, nurseries, hairdressers, printing houses, laundries, gardeners and breweries. According to the branch the identified savings range from 5 to 55 % of the energy consumption, representing cost savings of the same range.

In general the branch concepts are administrated by the Chamber of Commerce (the regional Ecological Enterprise Advising-offices) together with the responsible authorities and/or regional energy agencies (this differs from region to region). In regions with an own energy agency this agency acts often as the operating agent.

Energy Audits in industry

The Austrian Energy Consumers Association (Österreichischer Energiekonsumenten Verband ÖEKV) is a country wide independent organisation founded by the Austrian Industry Association (IV) and the national Chamber of Commerce (WKÖ).

The ÖEKV audits are free to the client company. The main target group are industrial companies in energy intensive branches. The free audit consists of 5 person days' work. The Ministry of

Economy and Labour provides ÖEKV with a yearly sum of about 50.000 € to cover the cost of the audits.

More than 400 ÖEKV audits have been carried out since 1981. In average the audit volume is between 25 and 30 audits per year. The energy savings range from 3 to 10% of the annual energy consumption.

Energy saving programme for federal buildings

On March 20th 2001 the Austrian Council of Ministers decided to initiate an energy saving programme for federal buildings. The energy consumption of more than 500 federal buildings, with overall heating costs of approximately 40 Mio. € and electricity costs of more than 46 Mio. €, respectively, will be optimised by making use of energy performance contracting.

The programme has not started yet, however, experiences show that energy cost savings actually achieved within energy performance contracting projects applied to federal buildings typically cover a range from 15 to 40 %, depending on the specific case and its initial situation.

Other Activities including Energy Audits

ECOPROFIT

The programme ECOPROFIT is an ECOlogical PROject For Integrated environmental Technology. It is targeted to industry. It focuses on pollution prevention, with efficient use of energy being one of its elements. ECOPROFIT started as a local programme in Graz and is now a registered trademark and spread to all over Austria.

The ECOPROFIT programme is targeted mainly to SME but is open to all companies not depending on company size or branch. There is a special scheme for very small enterprises. It is in general administered by a regional/local authority and supported by consultants.

In one city about 10-20 companies participate in the annual programme. In Graz electricity savings amount to max. 5 Mio. kWh / a, heat accounts for max. 13 kWh /a. The Eco-Business-Plan in Vienna which has a ECOPROFIT element included, triggers electricity savings of up to 4,7 Mio kWh /a, oil/gas savings amount to max. 5 Mio kWh/a. Average payback times are between 8 and 18 months.

Energy audits for existing buildings

In Austria there is a great variety of energy audits for existing buildings. In general the intention when setting up a programme for existing buildings was rather to offer support for building owners who are going to refurbish their building than to perform energy audits for a certain number or a specific group of buildings. Whether there have been set up particular goals in context of reducing energy costs, energy consumption or emissions depends on the specific programme.

ÖKO-Audit / EMAS

Since 13 July 1993 the Council Regulation (EEC) No 1836/93 of 29 June 1993 allowing voluntary participation by companies in the industrial sector in a Community Eco-Management and Audit Scheme (EMAS) has been in force. The objective of the scheme is to promote continuous improvements in the environmental performance of industrial activities. More than 400 companies have been registered so far.

PREPARE

PREPARE is an acronym for “Preventative Environmental Protection AppRoaches in Europe” which is an European initiative within the framework of EUREKA. The PREPARE-programme deals mainly with environmental issues, energy being just a part of the scheme.

Energy Audit Programmes in Austria

Energy Audit Programme
Other Programme related to Energy Auditing
Other Activity related to Energy Auditing

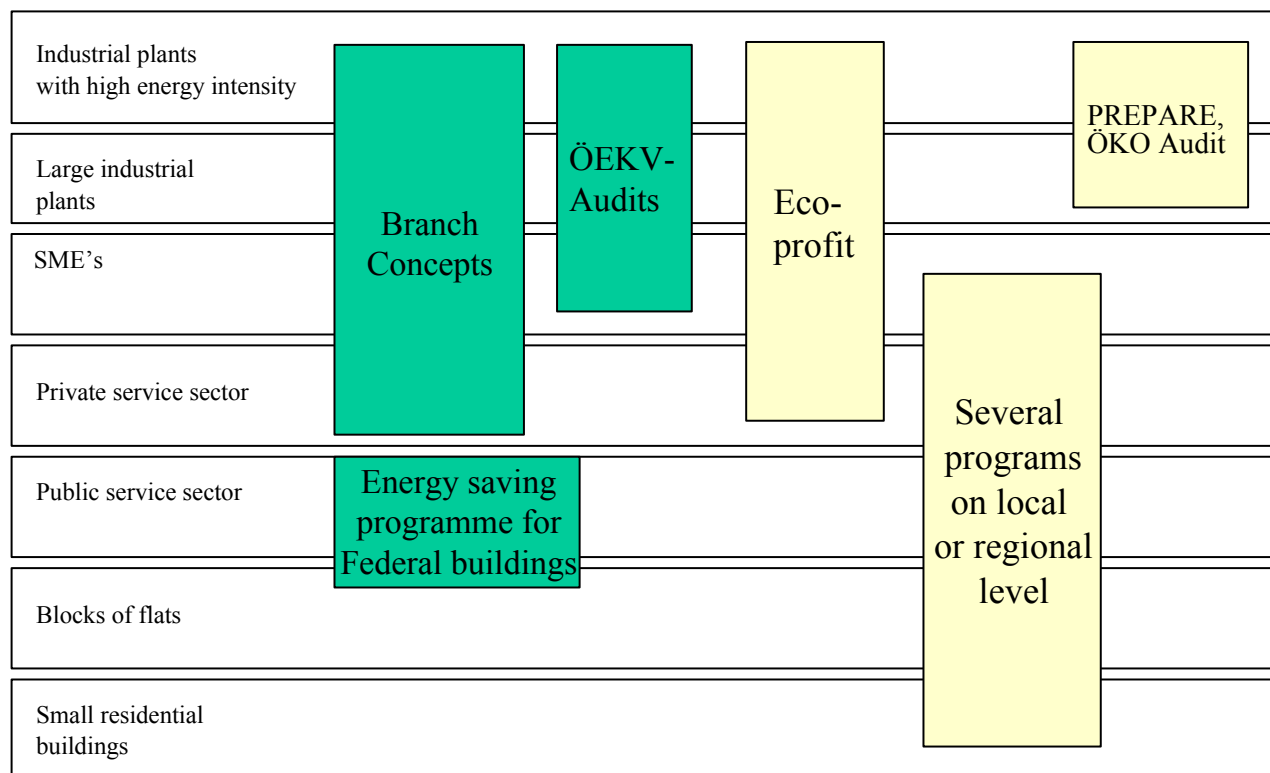


Table of EAP features coverage (other programmes and other activities with energy audits)

	Branch Concepts	ÖEKV Audits	ECOPROFIT
Status	1994-	1980-	1991-
Administration	WIFI, regional energy agencies	ÖEKV	Local/regional authorities
EA models	++	++	++
Auditors' tools	+	++	++
Training, authorisation			+
Quality control			+
Monitoring	+	++	+++
Volumes, results	++	++	+++
Evaluation			++

- +++ = Detailed information available
 ++ = Some information available
 + = Very little information available
 = No information available / does not exist

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Country Report

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Disclaimer

The information contained in this report has been gathered from publicly available sources and through interviews. All efforts have been made to secure the veracity of the report, however the authors cannot guarantee the content.

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COUNTRY REPORT

1. Background and present National Policy

The **Energy Report** 1993 of the federal government was agreed on in the Ministerial Council in May 1993 and adopted by the National Council after consideration on 6 April 1994. It laid down the goals for Austrian energy policy which, reaffirmed in the Energy Report 1996, remain unchanged. These are:

Security of supply, Cost-efficiency of the energy supply, Environmentally benign energy supply, Social acceptability of the energy supply system.

In order to achieve these objectives the federal government especially makes use of the following strategies: Promotion of the rational use of energy (improvements in energy efficiency) and of renewable sources of energy.

The **National Environmental Plan** (NUP) of the federal government was adopted in 1995 and provides Austria with a long-term concept and integrates these environmental commitments at all political levels — industrial policy, energy policy, agricultural policy and technology policy. In this plan, the major energy related targets are defined as further advances in energy efficiency and a continuing shift to renewable energy sources.

In this context a detailed catalogue of measures for reducing greenhouse gas emissions was prepared. The Second National Climate Report details these measures. The measures are grouped into the following four categories:

- Voluntary measures and subsidies being implemented.
- (mandatory) measures being implemented.
- Planned measures.
- Measures that are in a conceptual stage and will require more time to be realised and become effective. In the group of measures, priority is paid to a wide range of measures related to energy efficiency.

Under the **Kyoto** Burden-Sharing Agreement (1998), Austria is committed to reducing its emissions by 13%. This target requires the national GHG emissions to be reduced from about 75 Mt CO₂ equivalent to about 66 Mt. With reference to the 1990 situation, CO₂ is by far the most important GHG with a share of more than 80%.

The **national climate strategy** passed the Council of Ministers in June 2002, suggesting additional measures in the sectors room heating/buildings, transport, industry, waste, agriculture and forestry and energy supply. The instruments for industry mentioned are voluntary agreements, flexible mechanisms, an industrial energy efficiency programme (with the elements benchmarking, best practise and audits) and an ecological tax reform. In the building area among others an energy performance contracting impulse programme is foreseen.

Energy issues are in Austria often dealt with on regional level. The “Länder” have their own energy plans and can also run their own programmes. On the national level the ministry of economy and Labour (BMWA, responsible for energy), the ministry of transport, innovation and technology (BMVIT) and the ministry of agriculture and forestry, environment and water management (BMLFUW, responsible for the climate strategy and eco-audits etc) are the main players concerning audits.

2. Energy Audit Programmes

None.

3. Other Programmes related to Energy Auditing

3.1 The Branch Concept for industry

The Austrian industry is organised in country-wide national “umbrella”-organisations such as the Austrian Chamber of Commerce (Wirtschaftskammer Österreich, WKÖ). Its industry section is divided into 22 technical departments. The departments have different global tasks, including energy. The chamber has a regional structure with 9 regional (“Länder”) organisations. The Chamber of Commerce also operates an “Economical Promotion Institute” (WIFI-Ö) with special national programmes for trade and industry, such as financing and co-ordination of energy efficiency programmes. Some regional WIFIs have special offices for Ecological Enterprise Advising (Ökologische Betriebsberatung). These offices have activities in the industrial sectors with the title of Branch Concepts and finance interested companies to investigate their energy situation.

Energy matters are dealt with often on a regional level (“Länder”) and this is also the case for the branch concepts. The region of Upper Austria was the main driver for these concepts. In 1993 the Upper Austrian regional government created an energy plan. In 1994 the Chamber of Commerce and the regional energy agency initiated energy efficiency programmes for numerous sectors of trade and industry. This involved the local WIFI-organisation and the Ecological Enterprise Advising-office of Upper Austria in the project. This was the start of the Branch Concept energy audits.

Today the Branch Concept has been adopted in several Ecological Enterprise Advising-offices of the WIFI. In addition to Upper Austria, also Salzburg and Steiermark have taken responsibility for a number of industrial branches. Activities to this direction have been taken also in Tirol, Vorarlberg and Vienna.

The Branch Concept means that in a pilot study 10 to 15 companies of one sector/branch are investigated in an energy audit, identifying their main energy relevant processes, forming energy indicators and suggest energy saving measures. The results from these pilot cases are spread to the sector companies encouraging them to similar actions. The concept introduces best practises within the branch increasing also the awareness for rational use of energy.

3.1.1 Goals

The branch concepts do not have specific programme goals, however, they are embedded often in the regional energy plans and/or climate change programmes to reduce the specific industrial use of energy.

3.1.2 Target sectors

The Branch Concepts are targeted to services and industrial sector buildings and processes (mainly SME) and cover today: metal industry, joineries, brick and ceramics industry, sawmills, plastic

industry, butchers, bakeries, office buildings, hotels and restaurants, supermarkets, nurseries, hairdressers, printing houses, laundries, gardeners and breweries.

3.1.3 Administration

The administration of the branch concepts is done by the Chamber of Commerce (the regional Ecological Enterprise Advising-offices of the WIFI) together with the responsible authorities and/or regional energy agencies (this differs from region to region). In regions with an own energy agency this agency acts often as the operating agent. However, this task can also be carried out by the WIFI's Ecological Enterprise Advising-offices (often in co-operation with an agency).

The energy audit itself (it is rather a consulting process) is carried out by consultants (e.g. organised by WIFI offices) and/or by the staff of the agencies. The branch concepts are often combined with regional or national energy consulting/advising activities.

The WIFI offices collect the data from the pilot projects and develop a branch-oriented energy plan for the use of all enterprises in this branch (see 3.1.5 "models").

3.1.4 Implementing Instruments

The branch concepts are a voluntary scheme. They are linked to the WIFI activities towards SME and to energy efficiency activities of several regional energy agencies (e.g. information dissemination, marketing, increasing awareness). They are mentioned in regional energy and/or environmental plans, as well as in the national energy report from 1996. Some regions connect the branch concepts also to contracting schemes.

<http://www.esv.or.at/cinformation/publikationen/branchen.htm>

Promotion

The branch concepts are promoted within the WIFI organisation and via the chamber of commerce, but also by energy agencies, reaching several branches and their members. Outstanding companies can receive awards. Marketing is mainly done via internet, leaflets or brochures from the WIFI and/or the regional or local energy agencies.

Table 1: Overview of implementing instruments

Mandatory / legal schemes	Voluntary schemes
No links to mandatory or legal schemes	The branch concepts are a voluntary scheme
Fiscal incentives (taxes)	Fiscal incentives (subsidies)
There exists no link to the tax scheme.	Subsidies up to 50% for consulting of 5 days
Marketing tools	Policy issues
Internet, leaflets, brochures, awards	They are mentioned in the national energy report and in several regional energy / environmental plans.

Subsidies

The local Ecological Enterprise Advising-offices of the Chamber of Commerce deal with the financing of the Branch Concept energy audits. The cost of the audit is the price of 5 man-days per site, not depending on the size of the company (but it is mainly for SME). The audited company pays the consultant and gets up to 50 % of the audit cost as a subsidy. The subsidy is either provided by a national fund from the Ministry of Agriculture, Forestry, Environment and Water

management (administered by Kommunal Kredit AG, KKA), by WIFI itself and/or comes from regional authorities. The WIFI has agreed on daily rates for a consultant of about 500 €.

3.1.5 Energy Audit Models (phases of a branch concept)

The different phases for developing a branch concept:

1. Starting phase:

The core team (Chamber of commerce, Ecological Enterprise Advising-office, regional energy agency) chooses potential branches concerning their energy intensity, amount of members and model character. In a next step the branch representatives (Fachgruppen, Innungen, etc.) get involved and with their co-operation the project is started.

2. Creating the project team:

The project team consists of the core team together with the branch representatives and 2 to 4 energy consultants.

3. Kick-off Meeting:

At the Kick-off meeting the project team collects existing information and experiences to be used in the course of the project. A draft list of energy indicators and potential pilot companies are derived.

4. Pilot checks / audits:

The pilot companies are contacted via their branch representatives and are asked to participate in the branch concept. The companies have no costs, however, they have to confirm their willingness to pay for their own working time and to supply data.

After they signed an agreement an energy consultant analyses the company's energy situation (performs an energy audit). Data sources are energy bills, existing measuring protocols, unit parameters e.g. power, new measurements and talks with the customer. This information is used to form the energy indicators, which are checked on plausibility.

5. Mid-term meeting:

In this project team meeting the energy consultants report about their experiences with data collection and related problems. The identified indicators of the individual pilot companies are compared and checked. The list of indicators is up-dated due to the availability of data and meaningfulness. If necessary further indicators are derived from a second site visit. Measures to achieve energy and cost savings are presented, examining their usability for the branch concept.

6. Presentation of the draft branch concept:

A first proposal for a branch concept is presented to the members of a specific branch. Their experiences, comments and critics are integrated in the final version.

7. Final meeting:

Here the final editing of the branch concept is done, together with the co-ordination of PR and dissemination of the consulting know-how.

The project duration is between 4 and 7 months.

The energy audit/check consists in general of the following steps:

- Installation of an energy team (not always done)
- First site visit and data collection (define the energy flow)
- Definition of system borders (energy system, process, building, production)
- Data analysis (daily and weekly energy production and consumption lines)
- Definition of a list of energy efficiency measures (priority list by pay back time)
- Decision on measures to be realised
- Realisation of measures

3.1.6 Auditors' tools

There exist no compulsory tools, the following tools are offered (all in German language):

- Energy management handbook (published Nov. 1999, 110 pages):
E.V.A. and ÖEKV developed this handbook, which has the aim to give guidance to SME regarding energy efficiency activities. Target group is the top management as well as the energy managers. It contains details branch specific and technology check lists and also energy guidelines for environmental energy auditors. The handbook is distributed by the Ministry of Agriculture, Forestry, Environment and Water management and by WIFI in hard copies. E.V.A. offers it on the web (<http://www.eva.ac.at/projekte/bemas.htm>).
- Other handbooks, information material etc from regional WIFI organisations
- Several energy management courses for energy managers in companies are offered by WIFI (no detailed data available)
- The WIFI environmental information system ("Eco Check"):
This information system is a software tool developed by WIFI, offering especially information and management tools for SME. It covers environmental company analysis, legal boundary conditions and subsidies. Energy is only one part of it. The system is offered as CD ROM and on the web (<http://www.ess.co.at/WIFI/uis>).
The tool offers four items:
 - a company analysis (including energy): this is a step-by-step procedure with check lists in order to analyse the ecological situation of a company. The firm gets a feedback on its situation (e.g.: you have realised 43% of your potential).
 - management tools (general)
 - information on subsidies
 - and documentation
- A benchmarking system is in development:
This system will offer branch specific energy indicators to companies so that they are able to compare themselves with their competitors. Data from the branch concepts will be used for this system. This should give an impetus for further action.

3.1.7 Training, authorisation and quality control

The auditors in the Branch Concept are private consulting companies with "good reputation". They are mostly energy consultants (technical engineers). When a company takes part in the Branch Concept, it can choose the consultant independently, considering quality and price.

The Chamber of Commerce is in principle in charge of the quality control of the audits.

3.1.8 Monitoring

The monitoring of the industry sectors' energy audits consists of collecting the sector data from the pilot plants and distributing the Branch Concepts to the companies in the specific sector. This dissemination is done by the Ecological Enterprise Advising-offices of the Chamber of Commerce ("Ökologische Betriebsberatung"). In some regions the energy agency can be involved.

3.1.9 Auditing volumes

So far 16 branch concepts have been completed. In the initial phase in each concept 10 to 15 firms (in some cases 30) have been participating. The amount of companies actually carrying out an audit depends strongly on specific branch actions by the WIFI. Detailed figures are not available.

3.1.10 Results and Evaluation

There are no quantitative or qualitative targets set and so far no evaluation data are available.

The results of industrial branch energy audits can be evaluated only by the saving potentials reported in the audits and by the status of implementation reported by the clients. Data on actual measured savings has not been collected.

The following potentials were identified in the branch concepts:

Table 2: Identified saving potentials

Branch	Potential for energy savings	Potential for energy cost savings	Expected pay back time
Metal industry	25 %	20 % (range: 6-53%)	4,4 years (average)
Brick and ceramic	11 %	30 %	
Breweries	5-20 %	10-25 %	
Plastics	5-20%	5-30%	
Food markets	35-55%	9,5%	
Wood industry	10%	20%	
Joineries	5-25 %	15%	

3.2 ÖEKV Energy Audits in industry

The Austrian Energy Consumers Association (Österreichischer Energiekonsumenten Verband ÖEKV) is a country wide independent organisation founded by the Austrian Industry Association (IV) and the national Chamber of Commerce (WKÖ). IV is a voluntarily membership organisation, mostly joined by big industry. WKÖ is the chamber where membership is compulsory for industry and trade. For WKÖ SME are much more important.

ÖEKV

- provides energy information and energy consulting to its members
- protects the members' interests against authorities and other organisations
- supports and promotes energy efficiency activities through its network
- serves its members in all problems concerning energy; technology, energy law, promotion, contracts, etc.

ÖEKV provides the following services to enterprises

- reduction of energy demand and consumption
- optimised contracts and energy prices
- energy substitution
- comparison of energy costs
- economical calculations concerning energy saving investments
- audits and assessment of proposals
- replacement and revitalising of small and medium sized hydro power plants
- new technologies and more efficient manufacturing technologies

In the beginning of the 1980's ÖEKV made a contract with the Ministry of Economic Affairs about guidance and information targeted to industrial companies in energy intensive branches. The ministry provides funding for the energy audits carried out by ÖEKV, for the client company the audit is free. The company does not have to be ÖEKV member – the audit service is available to all companies.

Additional subsidies for energy saving investments (10...30 %) are available from a national fund administered by KKA (Austrian Kommunal Kredit AG) for certain branches of industry. The budget for this fund comes from the Ministry of Agriculture and Forestry, Environment and Water Management. This is the same fund as mentioned for the branch concepts. Every company can apply for it, if it meets the criteria of the funds, which are environmentally – and also economically – driven.

3.2.1 Goals

There exist no specific goals. General goals are given in the national energy policy.

3.2.2 Target sectors

The ÖEKV activities are targeted to buildings and processes within the industrial sector.

These ÖEKV audits have been carried out since 1981. At first they were targeted to large companies (with an energy consumption of more than 50 TJ) but later also smaller companies (with consumption of more than 20 TJ) have been included in this service.

The ÖEKV audit covers the heating energy (for heating, hot water and processes) and electricity use – water use will certainly be a part of the audit in future.

3.2.3 Administration

The administration of the ÖEKV audits is done partly in ÖEKV in co-operation with the energy section of the ministry of Economy and Labour (BMWA). The ministry provides the funding for the audits (ÖEKV has a contract with the ministry), ÖEKV acts as operating agent and as energy auditor and reports yearly the results to the ministry.

Approximately 5 persons in ÖEKV are involved in this work.

3.2.4 Implementing Instruments

The ÖEKV audits are linked to energy efficiency activities of the Ministry of Economy and Labour (BMWA) and are a voluntary scheme which is mentioned in the energy report 1996.

Promotion

The ÖEKV audits are promoted by the Ministry of Economy and Labour. ÖEKV is promoting the audits via energy seminars held once a year. Other promotion materials are leaflets and brochures. The audits are also promoted on ÖEKV's website (<http://www.oekv-energy.at>).

Subsidies

The ÖEKV audits are free to the client company. The free audit consists of 5 person days' work. The Ministry of Economy and Labour provides ÖEKV with a yearly sum of about 50.000 € to cover the cost of the audits.

Table 3: Overview of implementing instruments

Mandatory / legal schemes	Voluntary schemes
No link to mandatory or legal schemes	The ÖEKV audits are a voluntary scheme.
Fiscal incentives (taxes)	Fiscal incentives (subsidies)
There exists no link to the tax scheme.	Subsidies for 5 days consulting
Marketing oriented schemes	Policy issues
Seminars, leaflets, brochures, internet	They are mentioned in the national energy report

3.2.5 Energy Audit Models

The audit per company takes 5 person days and concentrates on the typical saving measures and on pointing out the needs for further investigations. This type of free audit can be done only once to a company, further consulting work is based on normal fee.

For the ÖEKV audits there are no different audit models. Energy concepts to companies are done as normal consultant service.

Method of work:

Introduction to the consultation:

1. Pre-selection of companies from the ÖEKV database according to energy consumption criteria or deposited wishes from the companies.
2. Contact with energy representatives by letter, fax and telephone
3. First talks on site to check possibilities and extent of the consultation. In case of sector-specific actions the consultations are free of charge. Request for co-operation with company staff regarding working time, data material, company visit for data collection.

Consultation:

1. Analysis of the energy situation by collecting of papers about energy consumption, outlines, schemes, networks of cables and pipes. Reporting of the energy flow and the nominal load values of the equipment. Organisation of measurement or read out of long term observation. Survey of user habits and process schemes. Assessment of efficiency and age of energy transformation technologies.
2. Creation of characteristic indicators for an internal comparison with other companies using better technologies or procedures.
3. Meeting with the energy representatives to focus the next measures
4. Calculation of the cost effectiveness (pay-back time) of the proposed measures based on all cost parameters.

Conclusion:

1. Report on all energy saving potentials, the data and block diagram find out, comparisons. Propose of best practice and stressed by the economic calculations. Setting of a priority catalogue for a possible implementation.
2. Discussion of the results
3. Invitation to experience exchange meetings in 1- or 2- day seminars
4. In case of sector actions writing of an interim report with analysis for energy saving potentials, consultation frame and suggested measures after 15 company consultations
5. Final report with complete reporting and analysis.

3.2.6 Auditors' tools

There exist no compulsory tools. The following tools are offered:

- Energy management handbook: <http://www.eva.ac.at/projekte/bemas.htm>
OEKV and E.V.A. developed this handbook, which has the aim to give guidance to SME regarding energy efficiency activities. Target group is the top management as well as the energy managers. It contains detailed branch specific and cross-technology check lists and also energy guidelines for environmental energy auditors. The handbook is distributed by the Ministry of Agriculture, Forestry, Environment and Water management and by WIFI.
- Several check lists and tariff model calculations of ÖEKV

3.2.7 Training, authorisation and quality control

The ÖEKV audits are done by the staff of ÖEKV. There are 4-5 consultants in ÖEKV (mostly technical engineers) doing the audits. The consultants have special fields of experience (heating,

electricity, gas, etc.). Usually the audit is carried out by a team of two experts, the expertise of the team members varies according to the need.

The consultants are experienced in the field of energy efficiency. They are continuously trained to the newest knowledge. ÖEKV arranges yearly several training sessions for its members on various energy-related topics and therefore the latest knowledge is always available to the auditors.

3.2.8 Monitoring, auditing volumes, results, evaluation

More than 400 ÖEKV audits have been carried out since 1981. The results of the ÖEKV energy audits can only be evaluated by the saving potentials reported in the audit reports. Data on actual measured savings has not been collected. Summary data is collected and analysed by ÖEKV.

In the beginning of the 1980's in the first audits the saving potential was high. The expected savings of 20-30 % in total energy consumption were met on average. The saving potentials detected during the last few years have been remarkably lower. The companies are in general rather reluctant to any improvement measures which have a longer (more than 2 years) pay-back time.

The results of the audits are reported by ÖEKV to the Ministry of Economy and Labour. There is no follow-up system for checking the implementation of the suggested improvements. ÖEKV is planning to improve the monitoring of the audits. Follow-up data on actual savings will be collected in the future.

In 1997 the ÖEKV audit was done in 27 companies. The total energy use of the companies was 864,1 Mio kWh. A saving potential of 28,6 Mio kWh/a (or 1,9 Mio €) was pointed out. This represents average savings of 3,3 %. The required investment was about 5 million € with a payback time of 2,6 years.

In 1998 in total 26 audits were carried out (stone and ceramics industry; chemical industry; foods processing; wood processing; metal processing; shoes, clothing and textiles; electrical industry). The potential energy savings identified amount to approximately 100.000 MWh, i.e. about 10% of the annual energy consumption of the companies audited.

In 1999 a total of 25 audits were carried out, resulting in saving potentials of approximately 30.000 MWh, i.e. about 3% of the annual energy consumption of the companies audited.

3.3 Energy saving programme for federal buildings (“Energiesparoffensive für Bundesgebäude”)

On March 20th 2001 the Austrian Council of Ministers decided to initiate an energy saving programme for federal buildings. Not least because of the positive experiences in context with a demonstration project with federal schools in Vienna¹, energy performance contracting² will be of crucial importance in context with this programme. The energy consumption of more than 500 federal buildings will be optimised by making use of energy performance contracting.

As the service of an energy service company (ESCO) within an energy performance contracting project includes the identification of suitable energy saving measures, this energy saving programme means that energy audits for more than 500 federal buildings will be performed until 2004.

3.3.1 Goals

After having made positive experiences in context with energy performance contracting demonstration projects this tool shall be applied to the energy-related optimisation of more than 500 federal buildings with overall heating costs of approximately 40 Mio. € and electricity costs of more than 46 Mio. €, respectively.

The main targets of this programme are the following:

- Reduce energy costs, energy consumption and emissions of the federal buildings addressed. The annual reduction of CO₂ emissions expected amounts to 70.000 to 100.000 t. As experiences show, energy costs can be reduced within an energy performance contracting project on average by 20 to 25 %;
- Serve as a model for reducing the energy costs of other buildings, mainly within the tertiary sector.

3.3.2 Target sectors

The programme aims at **federal buildings**. The building pool includes universities, offices, schools, police stations, barracks etc.

3.3.3 Administration

The energy saving programme was initiated by the Federal Council of Ministers. The Federal Ministry of Economics and Labour is in overall charge of the realisation of this programme.

The energy audits as well as all the other services in context with an energy performance contracting project will be performed by the ESCOs eventually chosen.

The relevant players have to be identified depending on the type of building. These players will be involved in the energy performance contracting project and its preparation as well. The energy

¹ For further information on this project please download the brochure ”EPC- Energy performance contracting – applied to Viennese schools” – <http://www.eva.ac.at/publ/pdf/epc-brosch.pdf>

² For further information on energy performance contracting please download the guideline book ”Energy performance contracting for small and medium-sized municipalities: guideline for success” – [http://www.eva.ac.at/\(en\)/projekte/tpf-rat.htm](http://www.eva.ac.at/(en)/projekte/tpf-rat.htm)

audit's costs are being included within the payment the ESCO receives for its services. This payment is being taken from the energy costs saved. The ESCO's payment depends on the actual performance of the energy saving measures implemented.

Usually it is agreed on that the ESCO has to present the results of the energy audits to the client in order to have its measure plan approved. Whether and to what extent activities in context with marketing and guidance of the energy audits are being conducted, will be the ESCO's decision.

3.3.4 Implementing Instruments

The energy saving programme for federal buildings is neither connected to fiscal incentives nor to any other of implementing instruments, however, it is mentioned in the national climate strategy.

The energy audits performed within this programme could be seen as a *market-orientated* scheme. The energy audits are being part of the ESCO's service which is being contracted by the federal building administration. The energy audit's costs are being paid out of the energy costs saved.

Table 4: Overview of implementing instruments

Mandatory / legal schemes	Voluntary schemes
Decision of the minister's council	
Fiscal incentives (taxes)	Fiscal incentives (subsidies)
There exists no link to the tax scheme	No links to subsidies
Marketing oriented schemes	Policy issues
Marketing via ESCOs	mentioned in the national climate strategy

3.3.5 Energy Audit Models

The procedure of carrying out an energy audit within an energy performance contracting project may be different depending on the specific case. Usually an ESCO follows a scheme when carrying out an energy audit.

An ESCO has developed a scheme named "Energy Check"³. This scheme shall be described as an example for an auditing scheme, which is being used by an ESCO. The "Energy Check" scheme includes besides of a preparation and analysis phase the realisation phase as well (see flow chart). The description below is not restricted to the analysis phase but rather refers to the "Energy Check" scheme as a whole. This scheme is being used by companies in Austria, Czech Republic, Germany, Hungary and Switzerland.

Within the *preparation phase* first talks are being conducted including the discussion of the *contract's duration*. If the negotiations shall be successful, the ESCO will be contracted and then will start collecting the *relevant basic data*.

Within the *analysing phase* the respective building is inspected and analysed. Based on the basic data and on the building's inspection a *report including proposed measures* is being prepared by the ESCO. This report will be presented to the client and then discussed. If there should be any additional measures the client wishes to realise, it is considered whether or not the respective measures can be included into the energy saving plan.

³ For further information please visit: <http://www.oekoplan.at>

Then the customer has to decide whether or not the energy saving plan should be realised in co-operation with the ESCO that prepared the plan. This step is not relevant in context with an energy performance contracting project. In that specific case it's clear that the company that was in charge of the preparation of the report on possible energy saving measures is in charge of realising the respective measures as well. In case that the client's decision should be not to realise the energy saving measures in co-operation with the ESCO that prepared the respective report, the client will be charged an amount which is equal to the calculated energy cost savings for one year.

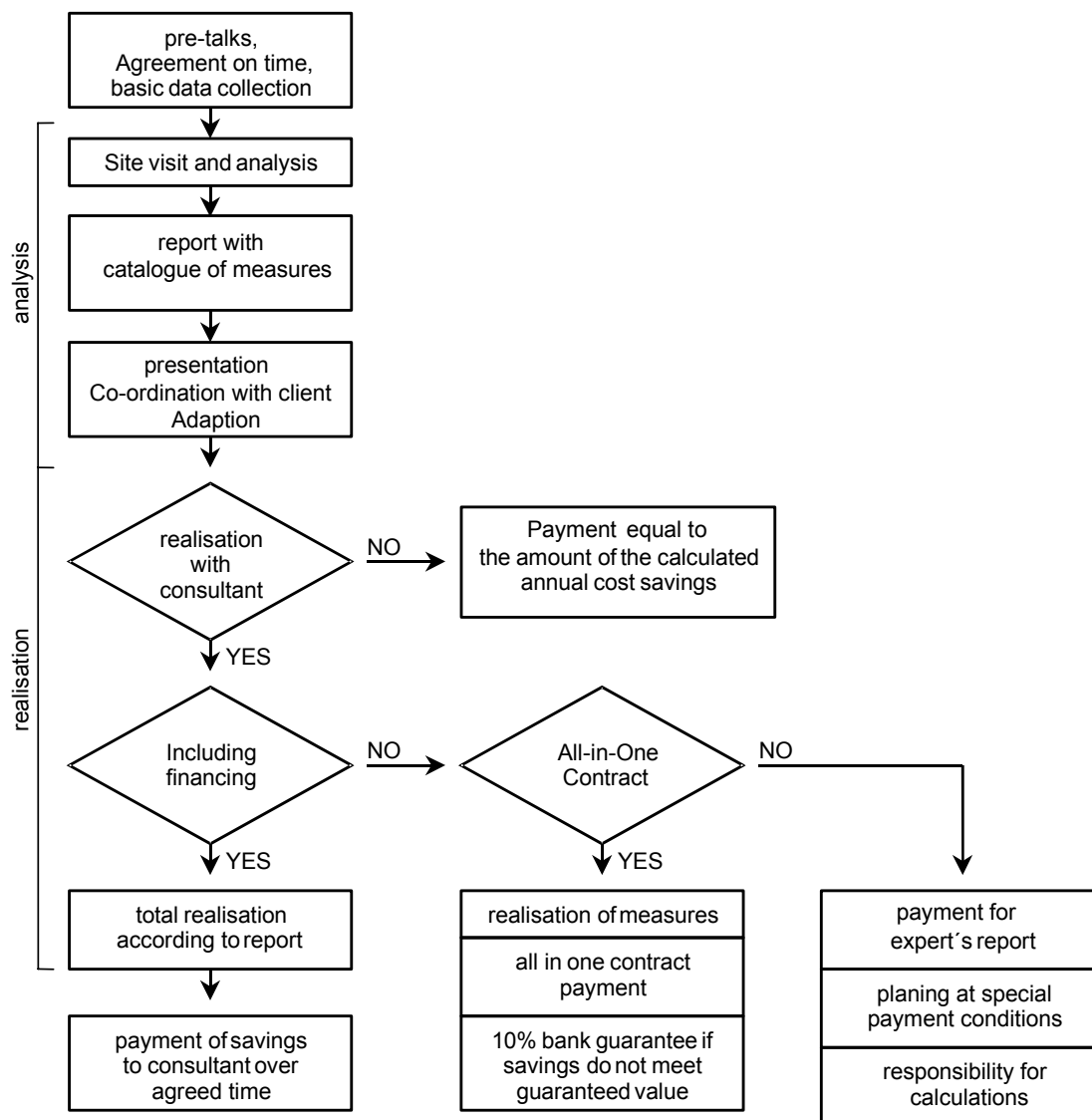


Figure 1: Flow chart for an energy check

If the decision is to realise the energy saving measures in co-operation with the company that performed the energy analysis, another decision has to be taken – whether or not the ESCO's services should include the financing of the measures to be realised. In context with an energy performance contracting project the ESCO is responsible for financing the energy saving measures as well. The measures will be realised according to the plan agreed on. The ESCO's payment is taken from the energy costs saved.

If the client decides to provide the financing of the energy saving measures planned on his own, the decision has to be taken whether or not the ESCO should act as a supervisor in context with the realisation of the measures. The payment conditions in context with the ESCO providing supervision services are being stated in the ESCO's report. The ESCO guarantees the amount of energy costs saved. If supervision in context with the realisation of the measures should not be necessary, the ESCO is being paid according to the conditions stated in the report.

3.3.6 Auditors' Tools

An ESCO usually has specific tools at its disposal for carrying out an energy audit. Below the software tool is described which is being used within the "Energy Check" scheme explained in chapter 3.3.5.

This specific software tool has been developed in order to handle an energy performance contracting project as a whole. This tool can be used not only for auditing a specific building but rather for accounting and following the progress of the project as well. It can link data of different buildings. This extensive data basis enables the users to calculate the energy cost reduction which is to be guaranteed for a specific building.

The first step in context with an energy audit is the detailed analysis of the respective object. All the energy consuming devices (heating and ventilation systems, lighting, computers, vending machines, etc.) are being registered and described as well as the characteristics of the building envelope.

The data collected comprise the device's general condition, its production year, etc. Building automation systems are being analysed more detailed. All the heating and air conditioning circuits, are being described as a single system each.

The data collected is being used for several purposes –including the software based calculation of the buildings' energy saving potential. The results are displayed in different ways including the overall energy savings to be expected, energy consumption split up by single energy meter and the amount of energy input, respectively. In case of lack of input data the program extrapolates the results.

The software tool has some additional features like diary function, maintenance handling and energy savings monitoring and forecasting.

3.3.7 Training, authorisation and quality control

The "Energy Check" e.g. is being performed by one of the partners within the network or by companies sub-contracted by them. Training and authorisation are issues to be decided about in-house.

In case that the auditor has to guarantee the results of the energy audit, like e.g. in context with energy performance contracting, there is a particular interest in the high quality of the energy audit.

3.3.8 Monitoring, auditing volumes, results, evaluation

Within the energy saving programme for federal buildings energy audits for more than 500 buildings will be performed by making use of an energy audit model similar to that one described above.

As the energy performance contracting projects haven't started yet no results from the respective energy audits are available up to now.

Experiences, however, show that energy cost savings actually achieved within energy performance contracting projects applied to federal buildings typically cover a range from 15 to 40 %, depending on the specific case and its initial situation.

4. Other Activities related to Energy Auditing

4.1 ECOPROFIT

The programme ECOPROFIT is an ECOlogical PROject For Integrated environmental Technology. It is targeted to industry. It focuses on preventing pollution, with efficient use of energy being one of its elements.

ECOPROFIT is based on a three-way partnership between the participating companies, a consulting group and local or regional authorities. This concept is protected as trademark ® and all activities are carried out in all sister programmes. The main co-ordinator e.g. in Graz is the Environmental Protection Office (EPO) of the city of Graz. As ECOPROFIT has become more and more popular, several consultants have joined to cover the different subject areas.

The origins of ECOPROFIT date back to 1991 when five companies in the city of Graz joined the project. At first the main focus was on in-depth analyses of the material flows of the companies. In 1993 the programme was organised for the first time on a workshop basis, providing “help for self-help” education including supporting consulting and case studies. In 1994-95 ECOPROFIT in Graz was started in full scale and the programme was in its present form.

ECOPROFIT has also spread from Graz to all over Austria. It first spread to the City of Klagenfurt, then to the municipalities Dornbirn, Bregenz and Wolfurt. Also Vienna took Ecoprofit as a module within its ECO-Business Plan Vienna. With Ecoprofit Bregenzerwald and Lower Austria the programme developed from the communal to regional level. Ecoprofit has also been adopted abroad, e.g. in the Czech Republic, Slovakia, Brazil, etc.

The combination of programme actors, local authorities, consultants and companies has been very different in all cases, but the programme itself suits well to be transferred to different circumstances.

In a company ECOPROFIT is usually an one-year programme. It consists of basic education to the company people – a series of 10-15 workshops in which all companies participate. Usually the workshop participants are the responsible people for environmental or waste issues. The workshops take place every month. The participants are also given homework for the next session. The training in these workshops and the following consulting service is given by private consultants who are specialised in ECOPROFIT.

A simplified version of the workshop part has been developed to very small businesses, which allows participants of small companies to benefit from the same methodology. The workshops are arranged locally or regionally for companies in a certain area. There is no national activity.

The workshop programme ends with the conferring of the ECOPROFIT awards. In order to achieve the award the companies must document their environmental achievements and include them in an environmental programme for the following year, outlining the improvements to take place. The award is granted for one year. There is monitoring by the ECOPROFIT commission whether the companies have carried out the projects they intended for the year.

The companies that have participated in the workshops and got the award, together with the municipality and the consultants, form an ECOPROFIT Club. They meet four times a year and

discuss current issues. As a part of this group some companies prepare Eco-Audit certification (ISO 14.001 or EMAS).

An ECOPROFIT yearbook is published every year with the general information about the programme, a summary of the participating companies' data and a one-page introduction of all the companies that have been awarded that year and of those belonging to the Ecoprofit Club.

4.1.1 Goals

ECOPROFIT's overall objectives are to strengthen the economic situation of companies by introducing pollution prevention and with that to improve the ecological situation of the region towards a sustainable regional development.

Although ECOPROFIT covers environmental issues in general, remarkable savings are expected from energy and water savings as well.

4.1.2 Target sectors

The ECOPROFIT programme is targeted mainly to SME but is open to all companies not depending on company size or branch. There is a special scheme for very small enterprises.

4.1.3 Administration

The EPO (Environmental Protection Office) of the City of Graz is responsible for the co-ordination and controlling. The EPO also contributes in terms of substance, especially in legal matters. It is instrumental in the preparation, verification and organisation of the ECOPROFIT awards to companies.

There is an EPO or an office with similar tasks in every city which takes care of ECOPROFIT actions. There is no national organisation to co-ordinate all ECOPROFIT activities in Austria.

4.1.4 Implementing Instruments

ECOPROFIT is a voluntary programme. Companies can chose at their free will to participate. It is considered as a pre-step to EMAS/ISO 14.001. The programme is embedded in several regional and local energy or environmental plans (e.g. local agenda 21) and within the national environmental plan. The Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW) and the Ministry of Transport, Innovation and Technologies (BMVIT) support the programme.

Promotion

ECOPROFIT ® is a registered trademark and is promoted by several regional and local authorities and by the involved consultants as well as via the ECOPROFIT academy and the Austrian Cleaner Production Centre. The major promotional material are info flyers and an ECOPROFIT film.

4.1.5 Financing

The City of Graz spends yearly about 220.000 € on ECOPROFIT. So far the City of Graz has invested a total of 730.000 € on the programme. This includes the development of the programme

and the financing of the EPO services in ECOPROFIT. In other cities the financing of ECOPROFIT comes from local budgets.

The participating companies pay the course fees for the workshops, which is between 1.400 € and 4.400 € depending on the size of the company. If the working hours of the companies were included, their contributions to the programme would be in total about 585.000 € every year.

The AMS (Arbeitsmarktservice, “employment market service”) has started granting subsidies for participating companies by accepting the workshop costs as further training of employees. The AMS is a local or regional organisation. The subsidy is limited to 66 % of the company’s cost. AMS gets its funds from taxes and unemployment funds.

Further subsidy is available from KKA for planned improvements, the maximum being 30 % of the investment cost or 22.000 €.

Table 5: Overview of implementing instruments

Mandatory / legal schemes	Voluntary schemes
No link to mandatory or legal schemes	ECOPROFIT is a voluntary programme. It is considered as a pre-step to EMAS/ISO 14.001.
Fiscal incentives (taxes)	Fiscal incentives (subsidies)
There exists no link to the tax scheme	Subsidies for workshops and investments
Marketing tools	Policy issues
registered trademark, promoted by regional and local authorities, via consultants and ECOPROFIT academy and Austrian Cleaner Production Centre.	regional and local energy or environmental plans and in the national environmental plan

4.1.6 Energy Audit Models

Energy is only one of about ten issues which are dealt with during the ECOPROFIT process. There is a special workshop dedicated only towards energy. General guidebooks for energy audits exist, but no specific energy audit models have been defined within ECOPROFIT. The general procedure includes:

- Input/output analysis
- suggestion of measures
- implementation of measures
- organisational changes
- legal aspects
- Identification of crucial indicators
- Development of an environmental programme

4.1.7 Auditors’ Tools

There exists an own information series with special recommended ECOPROFIT material. These tools have been specially designed for the programme, mostly by some of the consultants. They are used in the workshops which are integral component of the programme. Some tools are also available in English as ECOPROFIT is also working abroad. They are distributed via the

ECOPROFIT academy (www.cpc.at/oep.html) and the Cleaner production centre (http://www.cleanerproduction.at/home_e.html).

The main tools are:

- An info flyer
- An ECOPROFIT film
- Information series (several booklets on different topics: environmental costs, material stream analysis, waste management and logistics, energy analysis, legal aspects, environmental sound procurement and many others)

4.1.8 Training, authorisation and quality control

The ECOPROFIT academy offers a train-the-trainer programme for authorities and consultants. The basic workshop consists of an one week seminar in the academy, the development of a practical realisation concept on site with a final test and presentation. In the end they get a licence. In 2-3 day follow-up workshops they can deepen their knowledge on special topics.

4.1.9 Monitoring, auditing volumes, results, evaluation

In the early days of ECOPROFIT most of the companies were manufacturing companies, at present the participants are mainly from the service businesses. The character of the ECOPROFIT programme limits the number of newcomers to about 20 companies per year, within one municipality. That makes about 60 to 70 firms per year in whole Austria. The objective was to increase the number of ECOPROFIT companies to 100 by the year 2000 (only Graz), which was not completely reached (84 firms).

There is no summary data available on national level. The results of the *City of Graz* are summarised in the following table.

Table 6: Effects of measures (ECOPROFIT Graz)

Savings	Unit	1995	1996	1997	1998	99/00
Raw material	t	996	2.341	6.658	1.444	1.502
Solvents	t	334	183	49	1	-
Municipal waste	t	690	389	534	1.642	306
Hazardous waste	t	82	591	215	19	8
Paper and cardboard	t	129	435	171	1.520	-
Plastics	t	64	88	-	25	-
Recycling material	t	1.657	210	-	-	-
Water	1000m ³	110,7	171,7	155,7	110,1	161,5
Electricity	MWh	861,9	5.084	389		
Heating energy	MWh	3.347,2	13.088	7.845	8.775	12.174
Gas	Mio m ³	0,27	1,1	0,65	0,77	-
Oil	t	200	70	22	11	165

At least 55 % of the suggested measures have a payback time of less than two years. 20 % of the suggested measures refer to the energy consumption of the companies.

Results of ECOPROFIT in Lower Austria (this is an Austrian region “Bundesland”):

In 1997 the 10 companies in Lower Austria had the following environmental and energy savings.

Table 7: Effects of measures (ECOPROFIT Lower Austria, 1997)

Savings in	Total amount
Raw materials	3.800 t
Solvents	67 t
Waste	1.347 t
Dangerous materials	6.660 l
Heat	4.400.000 kWh
Electricity	156.100 kWh
Water	7.215 m ³
Transportation	650.000 km

The investments needed to obtain the savings are 1,9 Mio. €, the yearly cost savings about 0,6 Mio. €. Energy relevant measures had in average a share of 20% of all measures. The public budget for ECOPROFIT in Lower Austria is 53.000 € / year. The local or regional EPO collects the data from the ECOPROFIT companies / the companies report their results to the EPO. There is no monitoring on national level. The results are presented locally or regionally yearly in the ECOPROFIT yearbook.

Very good monitoring and evaluation data is available from the *Eco-Business-Plan Vienna*. The programme took off 1999 with one of four elements being ECOPROFIT. In the year 2000 they had 15 companies awarded, in 2001 already 31, with 37 firms on their way. The following table shows the effects of all 4 elements (climate alliance, tourism, ECOPROFIT and EMAS/ISO14.001) within the programme, with a total of 260 participating companies.

Table 8: Effects of measures (Eco-Business-Plan Vienna)

Effects of Measures	1999	2000	2001
Amount of measures realised	167	407	246
Energy saved [Mio kWh] electr.	0,28	4,71	1,53
oil, gas	1,31	5,21	3,22
district heating	0	-1,26	1,45
transport	n.a.	1,36	0,89
Energy total [Mio kWh]	2,14	12,26	8,03
Transport [km]	n.a.	935.000	853.000
CO ₂ emissions [t]	2.061	4.090	2.014
Raw material [t]	830	1.361	705
Water [m3] drink water	11.700	83.318	34.750
Used water	n.a.	7.297	15.103
Waste water	3.450	5.060	8.000
Investments [Mio Euro]	0,5	2,3	1,7
Savings [Mio Euro]	0,7	1,9	1,1
Average pay back time	8 months	14 months	18 months

There exists also a checklist for evaluations. The main items are: timing, professional, interdisciplinary, long term, comparability, independence, feedback, lessons learned. The list is open on the internet (www.sustainability.at/oekoprofit/opcheck.html).

4.2 Energy Audits for existing buildings

In Austria there is a great variety of energy audits for existing buildings. It has been decided not to describe all the programmes in detail, but rather to highlight the most important aspects in principle instead. A compilation containing short descriptions of more than fifty energy audit programmes offered in Austria including contact details can be downloaded via this address: <http://www.eva.ac.at/esf/index.htm> (available in German language only).

4.2.1 Goals

In general the intention when setting up a programme for existing buildings was rather to offer support for building owners who are going to refurbish their building than to perform energy audits for a certain number or a specific group of buildings. Whether there have been set up particular goals in context of reducing energy costs, energy consumption or emissions depends on the specific programme.

There might be also other reasons for setting up an energy audit programme like demand side management, customer care or public relations activities in general.

4.2.2 Target sectors

Depending on the specific programme the energy audits are being offered to private households, companies or municipalities. Of more than half of the programmes private households can take advantage as well as companies and municipalities. The remaining programmes are being offered to one or two of the target sectors mentioned.

4.2.3 Administration

Energy audits for existing buildings are mainly being offered by:

- Associations like e.g. Arbeitsgemeinschaft Erneuerbare Energie, Umweltberatung, Verein für Konsumenteninformation or Klimabündnis;
- Regional or local utilities;
- Regional or local energy agencies;
- Chambers;
- Regional or municipality authorities, respectively.

The details in context with administration related issues like financing, guidance, reporting and marketing depend on the specific programme.

The energy audits offered cover a wide range from advice via phone up to energy audits including a comprehensive energy saving concept. In context with financing it can be stated that energy audits performed by local energy agencies usually have to be paid for in case that the consulting services exceed a certain extent. Energy audits offered by other organisations are for free if certain pre-conditions are being fulfilled – e.g. for a utility's customers or for people being domiciled in the respective region ("Bundesland"). In the last-mentioned case the energy audits are being financed out of the budget of the organisation or body offering the energy audit.

In context with marketing activities additional to (local) print media or direct mailing the internet is being used more and more: Information on most of the programmes is available via internet as well.

4.2.4 Implementing Instruments

The details in context with implementation related issues like promotion, marketing, subsidies and legislation depend on the specific programme, too. It has been decided not to go into detail in context with this issue.

4.2.5 Energy Audit Models

The appropriate scheme to be made use of mainly depends on the extent of advice required.

In case that advice is only required in context with the replacement of a boiler or when new household appliances are to be purchased, information may be gathered via internet or by talking to the energy saving expert in his office or on the phone.

In case of a “quick energy check”⁴ the customer fills chosen data on the heating system as well as the building, respectively, in a form and forwards it via internet or post to the organisation that performs the energy audit. The customer then will receive feedback on his energy consumption and some advice on how to reduce energy consumption.

Within an extensive energy audit the respective building will be inspected and analysed in detail. A detailed energy audit applies to the heating system as well as to the building’s envelope and to the electrical household appliances used. Based on the basic data and on the building’s inspection a report including proposed energy saving measures is being prepared. This report will be presented to the customer, explained in detail and then discussed.

4.2.6 Auditors’ Tools

The description within this and within the following chapters refer to the energy audit programmes offered by Energie Tirol, the regional energy agency of Tyrol.

An extensive energy audit consists of the following phases:

- Data collection;
- Analysis and preparation of report;
- Presentation and discussion of report.

Within each phase specific tools are being used. In context with data collection a *form* designed by Energie Tirol is being filled in. The extent of data to be collected depends on the extent of the audit: E.g. in case of an energy-related optimisation of an existing building the full range of data necessary in context with the calculation of the building’s heat energy demand has to be collected.

By using an *excel spread sheet* developed by Energie Tirol the respective u-values as well as the heat energy demand are being calculated.

⁴ E.g.: Ökoplan “Quick Check”(<http://www.oekoplan.at/quickcheck/quickFrameset.html>), Graz Energy Agency: “Der Online-Energiecheck” (<http://www.grazer-ea.at/service.html>);

The energy audit's results are being summarised in a report. For the preparation of the report *existing text modules* referring to various energy saving measures can be used and adopted to the specific case.

4.2.7 Training, authorisation and quality control

In order to be authorised to perform an energy audit for Energie Tirol the respective person has to visit a specific course if she or he doesn't have the qualification needed anyway.

There are training units offered to the energy auditors to refresh their knowledge.

A survey on customer contentment has been completed in November 2001. Energie Tirol contacted customers having received an energy audit about their contentment. The survey showed that approximately 40 % were dissatisfied. One reason for that was that it could be easily recognised that the text modules used for the preparation of the energy audits' reports were not adopted to the specific cases.

4.2.8 Monitoring, auditing volumes, results, evaluation

The number of energy-related consultations performed by Energie Tirol and its consultants can be found in the table below:

Table 9: Types of consultation

Type of consultation	2000	2001 ⁵
Consultation in the energy auditor's office ⁶	181	164
Consultation in the customer's home	244	291
Detailed energy audit ⁷	75	46

In context with the energy-related advice for newly constructed buildings there has been prepared a report, which is available via Energie Tirol⁸. This report includes information on the respective results. The contents of the energy audits' reports are being saved as well as hardcopy as in a database. Depending on the extent of the energy audit all the fields provided are being filled in or only a part of it.

⁵ until November 23rd

⁶ In case energy-related advice is being offered during an afternoon this afternoon counts for one when calculating the figure stated in the table. As there will be usually more than one customer being consulted, the number of actual sessions is higher than the figure stated in the table. In future a more detailed registration will be available.

⁷ This includes energy audits in context with the energy-related optimisation of an existing building as well as advice in context with the energy-related optimisation of a new building.

⁸ office@energie-tirol.at

4.2.9 Observations and Future Plans

Below are some details on Energie Tirol's future plans in context with offering energy audits:

- In order to improve the quality in context with the energy audits further training of the auditors shall be intensified.
- A regular quality control will be implemented. Every customer will be interviewed on his contentment with the service.
- Improved forms for data collection will be implemented.
- The data base will be improved in order to simplify the analysis of the data collected within the energy audits.

4.3 ÖKO-Audit / EMAS

Since 13 July 1993 the Council Regulation (EEC) No 1836/93 of 29 June 1993 allowing voluntary participation by companies in the industrial sector in a Community Eco-Management and Audit Scheme (EMAS) has been in force. The objective of the scheme is to promote continuous improvements in the environmental performance of industrial activities.

The Federal Environmental Agency Austria established, revises and updates the list of registered sites and the list of accredited environmental verifiers. The updated list of registered sites is published by the European Commission in the Official Journal of the European Communities each year (the list of accredited verifier: every six months). Both lists contain codes for the description of the industrial activities in accordance with the classification of economic activities in the European community (NACE rev. 1) as established by Council Regulation (EEC) No 3037/90.

Companies wishing to become EMAS-certified, can hire an accredited environmental consultant, who undertakes the audit according to EMAS regulation. Subsidies of up to 36.300 € (according to the size of the firm) are available from a fund administered by KKA (Österreichische Kommunal Kredit AG) with a budget from the Ministry of Environment. More than 400 companies have been registered so far.

4.4 PREPARE

PREPARE ("Preventative Environmental Protection AppRoaches in Europe) is an informal, independent European network of experts in the field of cleaner production and sustainable development within the framework of EUREKA. The members come from research institutions, administration, governments, industry, and international organisations. The PREPARE-programme deals mainly with environmental issues, energy being just a part in the scheme (<http://www.prepare-net.org/>).

PREPARE stands for

- The joint development of new ideas and initiatives in the area of cleaner production, sustainable products and systems
- Exchange of information and dissemination of knowledge and skills
- The stimulation of innovative R&D projects
- Cooperation between research, administration, industry, and international organizations

The PREPARE procedure is targeted to large companies and is considered to be a pre-step towards an eco-audit. The government grants the company 72.700 € (50% for consultants and 50% for the company). The PREPARE-project in a company takes about one year.

In 1997 in 8 PREPARE-companies about 200 improvements were made, investments of 4,36 Mio. € produced a saving of 1,6 Mio. € in energy, waste, material, etc. costs. Four of the 8 companies continued to an environmental management system according to ISO 14.000, EMAS or Responsible Care.

A tool kit is available, however, within this well sorted tool box energy audits are only partly covered.